Particle physics	Fundamental particles

Learning objectives	**MUST (C)**	Recall the antiparticles of some common particles, and how particles/antiparticles compare
	SHOULD (B)	Define hadrons and leptons, and classify particles in the appropriate group
	COULD (A/ A*)	Explain the quark model of hadrons, and how the types of quark differ

STARTER: What do we mean by an *antiparticle*? How many types of antiparticle can you name?

EXTENSION: What would happen if there was a source of antimatter in this laboratory?

There already is! Any substance - like humans - that contain potassium-40 will emit positrons, which is a type of antimatter. Bananas are not only good for you but are also steady sources of antimatter, producing one positron approximately every 75 minutes.

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Task 1: Complete the summary sheet on antiparticles, hadrons and leptons. Use section 24.3.

Task 2: Complete the summary sheet on quarks and particle classification. Use section 25.3.

Task 3: Test your knowledge with the summary questions for these two sections.

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PLENARY: Look at these different combinations of quarks. In each case, what would you get; a baryon, meson, or nothing? (You don't have to name the particle). **Extension:** If there is a particle, what would the quark structure of its antiparticle be? What would its charge be?

$u\bar{u}$ $d\bar{s}$ uds $uu\bar{d}$